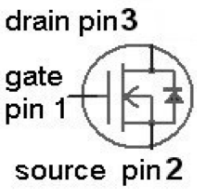
DMS05N60 N-Channel Depletion-Mode MOSFET

FEATURES

- Depletion Mode (Normally On)
- Advanced Planar Technology
- Rugged Poly-silicon Gate Cell Structure
- Fast Switching Speed
- RoHS Compliant/Lead Free
- ESD Sensitive



BV_{DSX}	$R_{DS(ON)}$ (Max.)	$I_{DSS,min}$
600V	700Ω	12mA

RoHS
COMPLIANT

HALOGEN
FREE
Avaliable

Applications

- Normally-on Switches
- SMPS start-up Circuit
- Linear Amplifier
- Converters
- Constant Current Source
- Telecom

Absolute Maximum Ratings

T_A=25°C unless otherwise specified

Symbol	Parameter	DMS05N60	Unit
V_{DSX}	Drain-to-Source Voltage [1]	600	V
V_{DGX}	Drain-to-Gate Voltage [1]	600	V
I_D	Continuous Drain Current	0.020	A
I_{DM}	Pulsed Drain Current	0.081	
P_D	Power Dissipation	0.50	W
V_{GS}	Gate-to-Source Voltage	±20	V
T_L	Soldering Temperature Distance of 1.6mm from case for 10 seconds	300	°C
T_J and T_{STG}	Operating and Storage Temperature Range	-55~150	

Caution: Stresses greater than those listed in the “Absolute Maximum Ratings “may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	DMS05N60	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	250	K/W

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Electrical Characteristics

OFF Characteristics **TA=25°C unless otherwise specified**

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSX}	Drain-to-Source Breakdown Voltage	600	--	--	V	V_{GS}=-5V,I_D=250μA
$I_{D(OFF)}$	Drain-to-Source Teakage Current	--	--	0.1	μA	V_{DS}=600V,V_{GS}=-5V
		--	--	10	μA	V_{DS}=600V,V_{GS}=-5V T_J=125°C
I_{GSS}	Gate-to-Source Leakage Current	--	--	100	nA	V_{GS}=+20V,V_{DS}=0V
		--	--	-100		V_{GS}=-20V,V_{DS}=0V

ON Characteristics **TA=25°C unless otherwise specified**

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
I_{DSS}	Saturated Drain-to-Source Current	12	--	--	mA	V_{GS}=0V,V_{DS}=25V
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	500	700	Ω	V_{GS}=0V,I_D=3Ma[4]
$V_{GS(OFF)}$	Gate-to-Source Cut-off Voltage	-2.7	--	-1.5	V	V_{DS}=3V,I_D=8μA
gfs	Forward Transconductance	--	15.4	--	mS	V_{DS}=10V,I_D=5mA

Dynamic Characteristics **Essentially independent of operating temperature**

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
C_{ISS}	Input Capacitance	--	12.3	--	Pf	V_{GS}=-5V V_{DS}=25V f=1.0MHz
C_{OSS}	Oput Capacitance	--	2.6	--		
C_{RSS}	Reverse Transfer Capacitance	--	1.8	--		
Q_G	Total Gate Charge	--	1.55	--	nC	V_{GS}=-5V~5V V_{DS}=300V,I_D=5mA
Q_{GS}	Gate-to-Source Charge	--	0.12	--		
Q_{GD}	Gate-to-Drain (Miller) Charge	--	0.56	--		

Resistive Switching Characteristics **Essentially independent of operating temperature**

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$T_{d(ON)}$	Turn-on Delay Time	--	4	--	ns	V_{GS}=-5V~5V V_{DD}=300V,I_D=5Ma R_G=20Ohm
T_{rise}	Rise Time	--	9	--		
$t_{d(OFF)}$	Turn-off Delay Time	--	14	--		
t_{fall}	Fall Time	--	84	--		

Source-Drain Dioe Characteristics **TA=25°C unless otherwise specified**

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{SD}	Diode Forward Voltage	--	--	1.2	V	I_{SD}=3.0mA,V_{GS}=-10V

NOTE:

[1] T_J=+25°C to +150°C

[2] Repetitive rating, pulse width limited by maximum junction temperature.

[3] Pulse width ≦ 380 μs ; duty cycle ≦ 2%

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- **Characteristic Curves**

Figure 1. Maximum Power Dissipation vs. Case Temperature

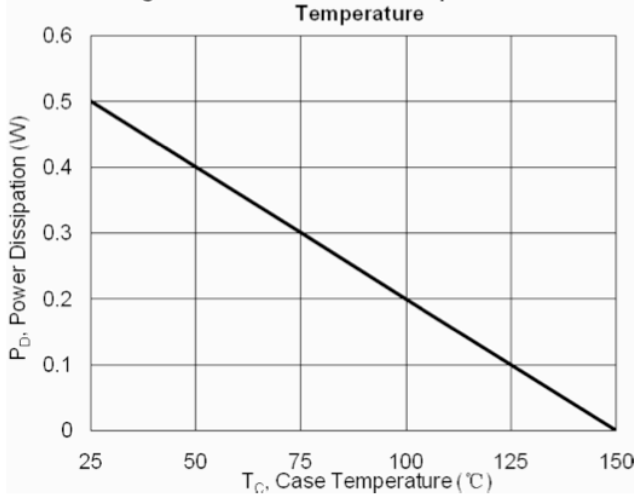

Figure 2. Maximum Continuous Drain Current vs Case Temperature

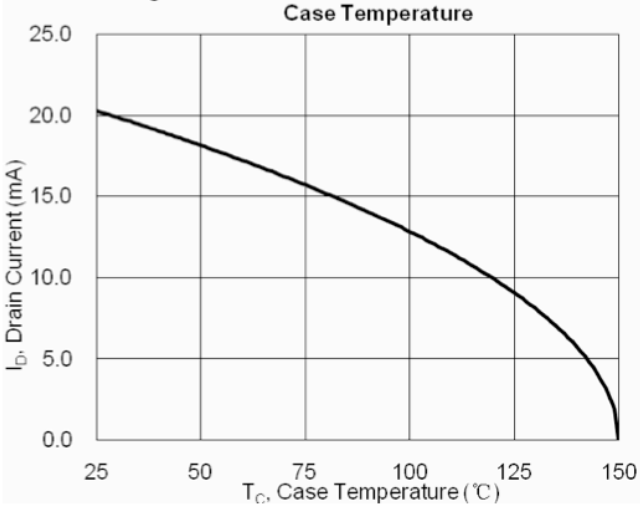

Figure 3. Typical Output Characteristics

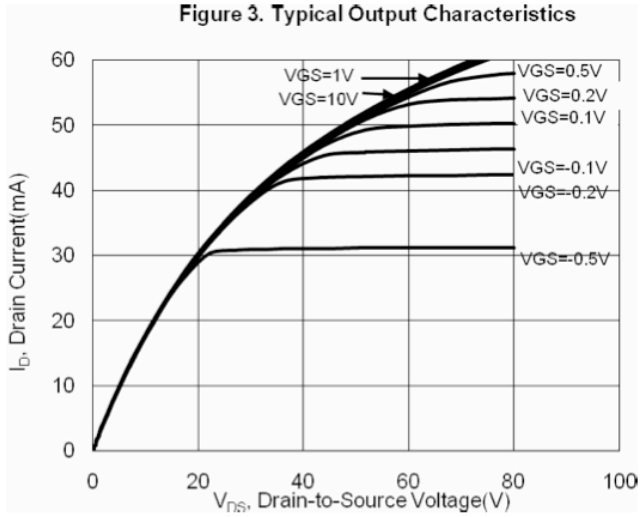

Figure 4. Typical Transfer Characteristics

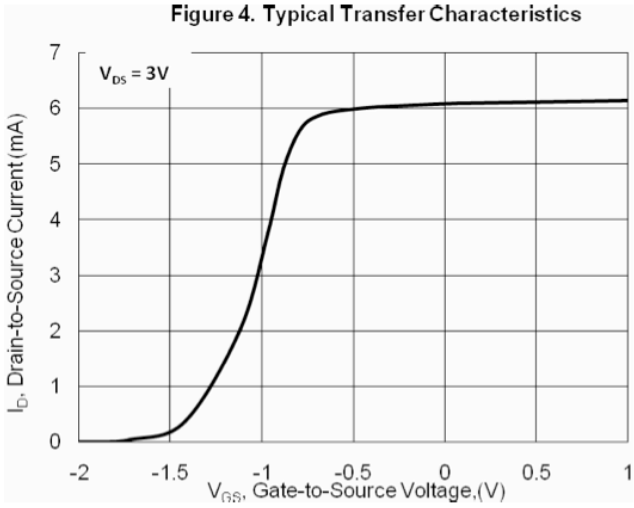

Figure 5. Typical Capacitance vs. Drain-to-Source Voltage

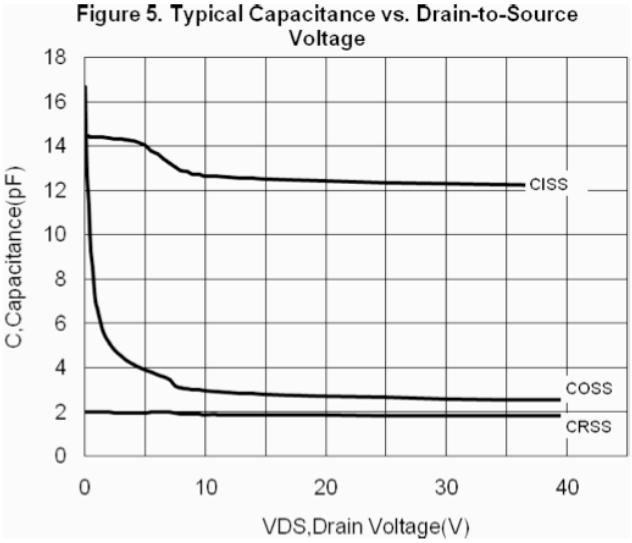

Figure 6. Typical Gate Charge vs. Gate-to-Source Voltage